

***Technological innovations in the transformation and development of peripheral areas of economies. Study of the Suwałki subregion.***

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**Summary**

*The research topic of this thesis discusses quantitative analyzes of transformation processes and decisive factors to development of underdeveloped subregions. The main hypothesis aims to show the dependence of the scale and pace of economic growth on innovation and the use of information and communication technologies in all areas of economic life and social. This applies in this case to the Suwałki peripheral subregion as an far from economically developed centers. The development, where the creation and use of increasingly sophisticated technological solutions takes place dynamically is a function of feedback between development of technology, and the scale her diffusion, use and social acceptance. At work, he was examined on three levels: European, national and local.*

*Work is a quantitative approach to growth processes as a response to research questions:*

- what are the chances for dynamic development of the sub-region due to diffusion and the use of technological innovations (ICT, digital and electronic communication) and what transformation conditions to be for the exit from the state of peripherality;*
- what factors stimulate the information economy and the processes of digitization and affect productivity, economic competitiveness, efficiency of the organization, public institutions and local communities in the peripheral areas.*

*Diagnostic features, describe socio-economic phenomena in the aspect of a specific space. Objects for analysis were selected in terms of these conditions among the subregions of the periphery of Europe and Eastern Poland (the lowest GDP ratios), defining the position of the Suwałki subregion. The set of features that make up the complex systems of variables required their aggregation, ordering and classification. In this part, they describe the structures functioning in the economic and social sphere in the following criteria: a) human capital (demography, professional activity, intellectual potential, quality of life, b) electronic economy described by the GDP indicator, innovation, the state of the information sector, digital services infrastructure, educational and social; c) use of technology, digital activity, education and dissemination of digital skills, e-services market. In the chapter shows the impact of the potential of the economy and human capital on the level of education, competences and, as a result, on the scale of the use of information technologies. A common phenomenon is their interdependence. The causative factors that effectively stimulate the development of economically underdeveloped sub-regions, as well as destimulating factors*

*(high unemployment rate, low social and occupational activity) causing its pronounced inhibition and weakening were analyzed.*

*The aim of the work was to examine the economic and social effects of phenomena related to the use of information technology and communication of their scale, dynamics and spreading under specific geographic conditions. Positive and negative factors of development processes as well as dependencies of domain indicators and digital development index and spatial objects classification (NUTS 3 sub-regions) were identified.*

*In the analytical procedure the main component (PCA) and cluster analysis (CA) methods were used. It was shown that according to the synthetic index, the leading subregion in digital development is Kainuu (Finland), followed by Karlovarsky (Czech Republic), Kesk Eesti (Estonia) and Banskobystricky (Slovakia). The relatively weak position of the Karditsa subregion (Greece), whose synthetic index was lower than in both Polish subregions (suwalkski and przemyski) is the result of low values of variables describing education, digital competences, infrastructure and the use of digital technologies. Based on the results of grouping, a dendrogram was created as part of cluster analysis, which shows the share of individual sub-regions in the processes of transformation and economic development.*

*The Suwalki subregion is characterized by a fairly even level of indicators of the information economy - in the general classification it is in the middle positions. This gives a positive answer to the working hypothesis, verifying the view that the use of access to digital goods and services, the advancement of skills in using technologies lead to increased productivity and economic growth.*

*An important result of the work is the confirmation of the role of information, communication and innovation technologies, which are driving factors conducive to entering the process of transformation and economic development and exiting from the periphery. The position of the Suwalki subregion among other analyzed subregions correlates with the progress and increase that is taking place, i.e. the effect of dissemination and use from information and communication technologies.*

*Keywords: transformation, growth and economic development, peripheral areas, cluster analysis, analysis of main factors, diffusion of knowledge and technology transfer, innovation, research and development, information and communication technologies, digital economy, competences and digital education.*

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